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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,910

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Masakazu Koizumi

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EXAMINER

GODENSCHWAGER, PETER F

ART UNIT

PAPER NUMBER

1796

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,910	<b>Applicant(s)</b> KOIZUMI ET AL.	
	<b>Examiner</b> PETER F. GODENSCHWAGER	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5,8 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,8 and 11-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

Art Unit: 1796

### **DETAILED ACTION**

Applicant's reply filed July 6, 2009 has been fully considered. Claims 5, 8, and 11 are amended, claims 1-4, 6, 7, 9, and 10 are canceled, and claims 5, 8, and 11-14 are pending.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimura et al. (JP Pub. No. 2002-129366A, English translation relied upon) in view of Vercammen (US Pat. No. 7,279,089).

Art Unit: 1796

Shimura et al. teaches a method of adding an amine to water going to a boiler (feed water for a steam generating unit) for preventing corrosion ([0005], [0008] of English translation).

Shimura et al. further teaches that the pH should be kept at 9.5 or greater (overlapping the range of 8.5-9.5) ([0010] of English translation), and that the amine is added in a mixture of water and amine before adding to the boiler (water to be feed into the boiler/feed water) ([0008] of English translation).

Shimura et al. does not teach that the amine is an amine of general formula (1) of claim 5. However, Vercammen teaches the use of choline, a compound of general formula (1) where  $R^1$ ,  $R^2$ , and  $R^3$  are methyl groups (hydrocarbon radicals with 1 carbon atom) and  $n=2$ , as a corrosion inhibitor for metals (1:9-23 and 2:63-3:10). Neither Shimura et al. nor Vercammen explicitly teaches using the amine/choline at 0.4-4 mg/L of feed water. However, such a teaching is implicit in the combined teachings as Shimura et al. teaches that the pH should be kept at 9.5 or greater (overlapping the claimed range of 8.5-9.5), the concentration of choline necessary to achieve such a pH would be dictated by such a teaching. Shimura et al. and Vercammen are analogous art because they are concerned with solving a problem of similar technical difficulty, namely the prevention of corrosion of metal surfaces by the quenching of corrosive acids with amines. At the time of the invention, a person of ordinary skill in the art would have found it obvious to use the choline of Vercammen with the method of Shimura et al. and would have been motivated to do so because Vercammen teaches that while other amines form a sticky solid when quenching acids, choline (the additive) does not (3:25-31). While neither Shimura et al. nor Vercammen explicitly teach that the method prevents formation of hydrogen chloride, the references render obvious all of the claimed ingredients, process steps and process conditions.

Art Unit: 1796

Therefore, the claimed result would inherently be achieved by the method as claimed and rendered obvious. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps and process conditions.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Braden et al. (US Pat. No 5,965,785) in view of Vercammen (US Pat. No. 7,279,089).

Braden et al. teaches a process of adding amines to a liquid (that contains water) that comes in contact with an atmospheric pipestill tower (atmospheric distillation column) in an amount to keep the bulk water condensate (which condenses at the top of the distillation column) at a pH of 5.5-6.5 (1:14-24, 2:10-25, 3:17-25, and 5:3-12). Braden et al. further teaches that the process prevents/inhibits corrosion (7:65-67).

Braden et al. does not teach the method where a compound of formula (1) is added in place of the amines (i.e. only a compound of formula (1) is added). However, However, Vercammen teaches the use of choline, a compound of general formula (1) where  $R^1$ ,  $R^2$ , and  $R^3$  are methyl groups (hydrocarbon radicals with 1 carbon atom) and  $n=2$ , as a corrosion inhibitor for metals in oil refinery systems (1:9-23 and 2:63-3:10). Braden et al. and Vercammen are analogous art because they are concerned with the same field of endeavor, namely the prevention of corrosion in oil refinery process through the addition of amines. At the time of the invention, a person of ordinary skill in the art would have found it obvious to use the choline of

Art Unit: 1796

Vercammen to replace the amines in the method of Braden et al. and would have been motivated to do so because Vercammen teaches that while other amines form a sticky solid when quenching acids, choline (the additive) does not (3:25-31). While neither Braden et al. nor Vercammen explicitly teach that the method prevents formation of hydrogen chloride, the references render obvious all of the claimed ingredients, process steps and process conditions. Therefore, the claimed result would inherently be achieved by the method as claimed and rendered obvious. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps and process conditions.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braden et al. (US Pat. No. 5,965,785) in view of Vercammen (US Pat. No. 7,279,089).

Regarding Claim 11: Braden et al. teaches a process of adding amines to a liquid (that contains water) that comes in contact with an atmospheric pipestill tower (atmospheric distillation column) where the amine may be added to the crude oil coming into the tower (which is after the desalter, see Fig. 1) (Fig. 1, 1:14-24, 2:10-25, 4:66-5:12). Braden et al. further teaches that the process prevents/inhibits corrosion (7:65-67).

Braden et al. does not teach the method where ( $\beta$ -hydroxyethyl) trimethylammonium hydroxide is added in place of the amines (i.e. only ( $\beta$ -hydroxyethyl) trimethylammonium

Art Unit: 1796

hydroxide is added). However, Vercammen teaches the use of choline (( $\beta$ -hydroxyethyl) trimethylammonium hydroxide), as a corrosion inhibitor for metals in oil refinery systems (1:9-23 and 2:63-3:10). Braden et al. and Vercammen are analogous art because they are concerned with the same field of endeavor, namely the prevention of corrosion in oil refinery process through the addition of amines. At the time of the invention, a person of ordinary skill in the art would have found it obvious to use the choline of Vercammen to replace the amines in the method of Braden et al. and would have been motivated to do so because Vercammen teaches that while other amines form a sticky solid when quenching acids, choline (the additive) does not (3:25-31). While neither Braden et al. nor Vercammen explicitly teach that the method prevents formation of hydrogen chloride, the references render obvious all of the claimed ingredients, process steps and process conditions. Therefore, the claimed result would inherently be achieved by the method as claimed and rendered obvious. If it is the applicant's position that this would not be the case: (1) evidence would need to be presented to support applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients, process steps and process conditions.

Regarding Claim 12: Braden et al. does not teach the method where the amine is kept at 0.1-5 times the amount of salt content in the oil. However, it is common practice in the art to optimize result effective variables such as relative concentration of amine to salt in the crude oil distilling process (See MPEP 2144.05). At the time of the invention, a person of ordinary skill in the art would have found it obvious to optimize the relative amount of amine to salt in the crude oil distillation process and would be motivated to do so because, as Braden et al. teaches, the salt

Art Unit: 1796

is directly responsible for producing the corrosive acid in the process (2:21-26). Therefore, based on the level of corrosion resistance required, one would want to adjust the acid quenching compound (amine) accordingly.

Regarding Claims 13 and 14: Braden et al. further teach measuring the pH of the condensate (condensed water) and adjusting the amount of amine accordingly (6:43-58). Braden et al. specify a pH range for the water condensate of the overhead accumulator of 5-6.5 as being corrosion safe (6:53-58).

### ***Response to Arguments***

Applicant's arguments filed July 6, 2009 have been fully considered but they are not persuasive.

Applicant argues that independent claims 5, 8, and 11 all require that the claimed method prevents corrosion of metal and formation of hydrogen chloride whereas the teachings of Vercammen is concerned with preventing corrosion caused by ammonium chloride. However, it is noted that the result of a method that would flow naturally from following the claimed steps of a method would be inherent to such a method. Whether or not prevention of corrosion or hydrogen chloride formation is *intended* is of little patentable weight as such a result would be inherent in following the steps as claimed and rendered obvious in view of Vercammen.

In response to applicant's argument that Vercammen is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977



Art Unit: 1796

F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Vercammen and Shimura et al. are deemed analogous art as it is concerned with the prevention of acid corrosion of metal through the addition of amine compounds. In response to the argument that Vercammen is concerned with ammonium chloride and not hydrogen chloride, as set forth above, while the limitation that prevention of corrosion or hydrogen chloride formation is *intended* is of little patentable weight, it is worth noting that both ammonium chloride (the acid with which Vercammen is specifically concerned) and hydrogen chloride are both Bronsted-Lowry acids, and in an aqueous solution the active species would be  $\text{H}_3\text{O}^+$ . Therefore, one of ordinary skill in the art would find analogous the prevention of  $\text{H}_3\text{O}^+$  from either hydrogen chloride or ammonium chloride as both form the same active species.

Applicant argues that the amounts of a compound cannot be implicit in a teaching reference when the reference does not describe the compound therein. However, as set forth above, Shimura et al. teaches that the pH should be kept at 9.5 or greater (overlapping the claimed range of 8.5-9.5), and thus the concentration of choline necessary to achieve such a pH would be dictated by such a teaching as pH and base concentration cannot be separated.

Applicant further argues that Vercammen is concerned with a compound added to crude oil during refining which is not an aqueous solution and therefore the concept of pH appear meaningless within the teachings. However, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have

Art Unit: 1796

suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In addition, Vercammen does teach adding choline with water (3:45-50).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the general teaching of Vercammen that choline (( $\beta$ -hydroxyethyl) trimethylammonium hydroxide) be used in place of amines in order to avoid forming a sticky solid when quenching acids would be enough to suggest to one of ordinary skill in the art to do so.

Applicant's arguments regarding the amendment to claim 11 reciting that only the compound of formula (1) / ( $\beta$ -hydroxyethyl) trimethylammonium hydroxide is added has been addressed in the rejections above. As the teachings of Vercammen suggest using choline (( $\beta$ -hydroxyethyl) trimethylammonium hydroxide) in place of amines, one would be motivated to replace entirely the amines of Braden et al. with the single compound of Vercammen.

Applicant argues that Braden et al. teaches that blends of amines may be custom matched to the system and therefore teaches away from using a single compound. However, the general teaching of Vercammen that choline (( $\beta$ -hydroxyethyl) trimethylammonium hydroxide) be used in place of amines in order to avoid forming a sticky solid when quenching acids would be enough to suggest to one of ordinary skill in the art to do so.

Art Unit: 1796

Applicant argues that as Braden et al. is already aware of the problem of formation of a wet paste, the blends of amines taught by Braden et al. must also avoid such a formation. However, the invention of Braden et al. requires a custom blend of amines to prevent such buildup, which would change for each situation, whereas the compound of Vercammen simply does not form a paste at all. Thus the advantage of being able to use the single compound of Vercammen in place of a custom blend that changes for each situation would clearly be an easier to use and more efficient corrosion prevention agent leading to an economic advantage.

Applicant argues that the presently claimed invention leads to unexpected advantages and specifically points to Test Example 4 on Pg. 39, and the chart in Fig. 3 of the original specification. However, this specific data does not compare such results to any other results. Therefore, it cannot be used to show that anything is indeed unexpected, especially with regards to improvement in secondary corrosion prevention. With regards to the data in Tables 3 and 5, such a chart does not compare the claimed invention to the closest prior art as stated by Applicant, specifically with Braden et al., as Braden et al. does not use a single amine but a blend of amines (see abstract). In addition, the data in Tables 3 and 5 and the corresponding examples are not commensurate in scope with the claims as the claims recite specific pH values of solutions and process steps that are not present in the examples.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1796

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### *Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER F. GODENSCHWAGER whose telephone number is (571)270-3302. The examiner can normally be reached on Monday-Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 1796

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October 27, 2009